

## RIVERS AND FLOODS, MAY, 1912.

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The lower Mississippi River flood continued throughout the month, and on the last day the river was still above the flood stage from Vicksburg southward. The full report on this flood will appear at a later date, but instead of a separate Weather Bureau bulletin, a joint report will be prepared by the Department of Agriculture, the War Department, and the Interior Department, and submitted to the President of the United States. Each department will discuss only such matters as pertain to its particular field.

Apart from the Mississippi flood there was none of special importance during the month of May. The Missouri and upper Mississippi Rivers were at moderate stage, as were also their tributaries except the Illinois River which remained above the flood stage throughout the month.

There was a moderate flood in the lower Neosho River from May 11 to 13 as a result of the heavy rains of May 10. The losses and damage amounted to about \$15,000, principally to crops and farm lands. Warnings were issued for the flood, and property to the value of about \$5,000 was saved thereby.

A flood that occurred in the Saginaw River and its tributaries during the second half of the month is said to have been the only pure rainfall flood in that river of which there is record. This flood was caused by a series of rains from May 11 to 22, inclusive, the total fall for the period ranging from 6 to 11.5 inches. The rise was slow until heavy rains on May 20 and 21 caused a more rapid rise, and warnings were at once issued. The crest of the flood passed Saginaw, Mich., on May 24, with a high stage of 24 feet, 5 feet above flood stage. Much damage of the usual character occurred, and in some places along the Tittabawassee River it was necessary to use boats to remove people from the flooded districts.

There was a flood in the James River of Virginia caused by very heavy rains on May 11 and 12, and warnings were issued on May 12 and 13. At Columbia, Va., the river reached a stage of 29 feet at 4 p. m., May 13, 11 feet above the flood stage, and at Richmond the crest stage was 17.3 feet at 1.30 p. m., May 14, 7.3 feet above the flood stage. Property to the value of about \$30,000 was destroyed or damaged, nearly all in crops and farm lands, while property to the value of about \$500,000, mainly in the city of Richmond and vicinity, was safeguarded by the warnings of the Weather Bureau.

Warnings for moderate floods in the Cape Fear River of North Carolina were issued on May 7 and in the Roanoke and Neuse Rivers about a week later. Stages occurred as forecast, and property to the value of about \$50,000 was saved. The losses, however, amounted to about \$100,000.

A flood occurred in the Upper Pedee River of South Carolina on May 14 and 15. The rain that caused the flood occurred at upper headwaters beyond the region of observation, and warnings were therefore not issued until May 14, when the river was rapidly approaching the flood stage of 27 feet at Cheraw, S. C. The highest stage reached at this place was 29.1 feet from 8 a. m. to 12 noon, May 15, but no flood stages were reached at points below. The losses, so far as could be learned, did not amount to more than \$3,000, while the value of property saved by the only warning given was about \$5,000.

Moderate floods occurred at the same time in the Catawba, Santee, and Wateree Rivers. Warnings were issued and no losses of consequence were reported.

The floods in the Black Warrior and lower Tombigbee Rivers finally came to an end on May 17 when the Tombigbee River at Demopolis, Ala., fell below the flood stage. This flood had been in progress since February 25, and exceeded in duration any previous flood of record. At Demopolis the mean stage of 53.9 feet for the month of April was the highest for 19 years, and the lowlands below the city on both sides of the river were flooded for a distance of about 200 miles, the overflowed territory ranging in width from one-half mile to 2 miles. Warnings were issued frequently and property to the value of about \$200,000 saved thereby. The losses, which fell principally upon lumber-mill owners through enforced suspension of business, amounted to about \$85,000.

Flood stages were also reached in the Pearl River of Mississippi, but without loss other than that occasioned by delay in lumbering operations and the growth of pasturage.

Floods began in the Rio Grande, and the Grand, Gunnison, and Colorado Rivers during the last 10 days of the month, and were still in progress at the end of the month, by which time the Rio Grande at El Paso, Tex., had reached a stage of 17.6 feet, 2.6 feet above the flood stage, and the Colorado River at Topock, Ariz., a stage of 19.7 feet, 5.7 feet above the flood stage. Warnings were issued at the proper time, and a report on the floods will appear at a later date.

The annual rise of the Columbia River was still in progress at the end of the month, with the Willamette River at Portland, Oreg., at a stage of 19.1 feet, 4.1 feet above the flood stage.

Hydrographs for typical points on several principal rivers are shown on Chart I. The stations selected for charting are Keokuk, St. Louis, Memphis, Vicksburg, and New Orleans, on the Mississippi; Cincinnati and Cairo, on the Ohio; Nashville, on the Cumberland; Johnsonville, on the Tennessee; Kansas City, on the Missouri; Little Rock, on the Arkansas; and Shreveport, on the Red.